

## CLAIMS

What is claimed is:

1           1.     In a wireless cellular communication system comprising a base station  
2     and at least one repeater communicating over a wireless backhaul link for  
3     communicating with a plurality of mobile subscribers, a method for improved  
4     backhaul efficiency, comprising the steps of:

5                 dynamically assigning for said backhaul link at least one packet  
6     channel for transmission of selected packets on a backhaul signal for a subscriber,  
7     said at least one packet channel comprising at least an RF frequency and a channel  
8     definition; and

9                 transmitting said selected packets on said at least one packet channel  
10    between said at least one repeater and said base station.

1           2.     The method according to claim 1, further comprising the step of  
2     performing said assigning step in response to a request for communicating over  
3     said backhaul signal for one of said plurality of mobile subscribers.

1           3.     The method according to claim 2, wherein said request include  
2     a priority field.

1           4.     The method according to claim 3, further comprising a comparing step  
2 wherein said data priority fields are compared to determine whether to terminate  
3 transmission of a lower priority transmission to allow transmission of a higher  
4 priority transmission.

1           5.     The method according to claim 1, further comprising the step of  
2 dynamically reassigning at least a portion of said assigned packet channel for  
3 transmission of a second backhaul signal.

1           6.     The method according to claim 1, wherein said channel definition  
2 includes a set of parameters which define said packet channel, said parameters  
3 comprising at least one of:

4                   a.     a number of said selected packets which can be sent over said  
5 assigned packet channel; and

6                   b.     a number frames allocated for transmission of said selected  
7 packets.

1           7.     The method according to claim 6, wherein said channel definition  
2 further includes an identified time for transmission of said selected packets.

1           8.     The method according to claim 6, wherein said backhaul signal  
2 comprises at least one selected from the group consisting of user traffic and  
3 control data.

1           9.     The method according to claim 8 wherein said user traffic is  
2 comprised of voice traffic.

1           10.    The method according to claim 1, wherein said packets are  
2 transmitted over said backhaul link using a higher order modulation as compared to  
3 a ground link between said at least one repeater and said subscriber.

1           11.    The method according to claim 1, further comprising the step of  
2 converting between a packet based backhaul signal and a non-packet based ground  
3 link signal.

1           12.    The method according to claim 1, wherein said at least one repeater  
2 comprises a plurality of repeaters, wherein one of said at least one packet channel  
3 is used to transmit packets between multiple repeaters selected from said plurality  
4 of repeaters and said base station.

1           13. In a wireless cellular communication system comprising a base station  
2 and a repeater communicating over a wireless backhaul link for communicating  
3 with a plurality of mobile subscribers, a system for improved backhaul efficiency,  
4 comprising:

5                   a structure for dynamically assigning for said backhaul link at least one  
6 packet channel for transmission of selected packets on a backhaul signal for a  
7 subscriber, said at least one packet channel comprising at least an RF frequency  
8 and a channel definition; and

9                   structure for transmitting said selected packets on said at least one  
10 packet channel between said repeater and said base station.

1           14. The system according to claim 1, further comprising a structure for  
2 performing said assigning step in response to a request for communicating over  
3 said backhaul signal for one of said plurality of mobile subscribers.

1           15. The system according to claim 14, wherein said request include a data  
2 priority field.

1           16.    The system according to claim 15, further comprising a structure for  
2    comparing wherein said data priority fields are compared to determine whether to  
3    terminate transmission of a lower priority transmission to allow transmission of a  
4    higher priority transmission.

1           17.    The system according to claim 13, further comprising a structure for  
2    dynamically reassigning at least a portion of said assigned packet channel for  
3    transmission of a second backhaul signal.

1           18.    The system according to claim 13, wherein said channel definition  
2    includes a set of parameters which define said packet channel, said parameters  
3    comprising at least one of:

4                   a.    a number of said selected packets which can be sent over said  
5    assigned packet channel; and

6                   b.    a number frames allocated for transmission of said selected  
7    packets.

1           19.    The system according to claim 18, wherein said channel definition  
2    further includes an identified time for transmission of said selected packets.

1           20. The system according to claim 18, wherein said backhaul signal  
2 comprises at least one selected from the group consisting of user traffic and  
3 control data.

1           21. The system according to claim 20, wherein said user traffic is  
2 comprised of voice traffic.

1           22. The system according to claim 13, further comprising a structure for  
2 transmitting said packets over said backhaul link using a higher order modulation as  
3 compared to a ground link signal between said at least one repeater and said  
4 subscriber.

1           23. The system according to claim 13, further comprising a structure for  
2 converting between a packet based backhaul signal and a non-packet based ground  
3 link signal.

1           24. The system according to claim 13, wherein said at least one repeater  
2 comprises a plurality of repeaters, wherein said structure for transmitting said  
3 selected packets on one of said at least one packet channel is used to support  
4 communications between multiple repeaters selected from said plurality of  
5 repeaters and said base station.